



#15/E

SEQUENCE LISTING

<110> O'Donnell, Michael

<120> DNA POLYMERASE III HOLOENZYME

<130> 19603/10214

<140> 08/828,323

<141> 1997-03-28

<160> 60

<170> PatentIn Ver. 2.0

<210> 1

<211> 28

<212> PRT

<213> Escherichia coli

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Leu Arg Ala Ala Tyr Leu Leu Leu Gly Asn Asp Pro
20 25

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<211> 21

<212> PRT

<213> Escherichia coli

<400> 2

Ala Ala Tyr Leu Leu Leu Gly Asn Asp Pro Leu Leu Leu Gln Glu Ser
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Gln Asp Ala Val Arg
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<211> 14

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<213> Escherichia coli

<400> 3

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<211> 24

<212> PRT

<213> Escherichia coli

<400> 4

Val Glu Gln Ala Val Asn Asp Ala Ala His Phe Thr Pro Phe His Trp

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Val Asp Ala Leu Leu Met Gly Lys

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<210> 5

<211> 33

<212> DNA

<213> Escherichia coli

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<211> 1032

<212> DNA

<213> Escherichia coli

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cgccgttgaac aggcgggtaa tgcgtatgcgtt catttcaccc cttttcattt ggttgcgtgt 660
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agcgttgcgtt ttatggatgg tgcgtatgcgtt catttcaccc cttttcattt ggttgcgtgt 780
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<211> 127

<212> DNA

<213> Escherichia coli

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gtaactg 127

<210> 8

<211> 104

<212> DNA

<213> Escherichia coli

<400> 8

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<210> 9

<211> 343

<212> PRT

<213> Escherichia coli

<400> 9

Met Ile Arg Leu Tyr Pro Glu Gln Leu Arg Ala Gln Leu Asn Glu Gly
1 5 10 15

Leu Arg Ala Ala Tyr Leu Leu Leu Gly Asn Asp Pro Leu Leu Leu Gln
20 25 30

Glu Ser Gln Asp Ala Val Arg Gln Val Ala Ala Ala Gln Gly Phe Glu
35 40 45

Glu His His Thr Phe Ser Ile Asp Pro Asn Thr Asp Trp Asn Ala Ile
50 55 60

Phe Ser Leu Cys Gln Ala Met Ser Leu Phe Ala Ser Arg Gln Thr Leu
65 70 75 80

Leu Leu Leu Pro Glu Asn Gly Pro Asn Ala Ala Ile Asn Glu Gln
85 90 95

Leu Leu Thr Leu Thr Gly Leu Leu His Asp Asp Leu Leu Leu Ile Val
100 105 110

Arg Gly Asn Lys Leu Ser Lys Ala Gln Glu Asn Ala Ala Trp Phe Thr

115

120

125

Ala Leu Ala Asn Arg Ser Val Gln Val Thr Cys Gln Thr Pro Glu Gln
130 135 140

Ala Gln Leu Pro Arg Trp Val Ala Ala Arg Ala Lys Gln Leu Asn Leu
145 150 155 160

Glu Leu Asp Asp Ala Ala Asn Gln Val Leu Cys Tyr Cys Tyr Glu Gly
165 170 175

Asn Leu Leu Asn Leu Ala Gln Ala Leu Glu Arg Leu Ser Leu Leu Trp
180 185 190

Pro Asp Gly Lys Leu Thr Leu Pro Arg Val Glu Gln Ala Val Asn Asp
195 200 205

Ala Ala His Phe Thr Pro Phe His Trp Val Asp Ala Leu Leu Met Gly
210 215 220

Lys Ser Lys Arg Ala Leu His Ile Leu Gln Gln Leu Arg Leu Gly Gly
225 230 235 240

Ser Glu Pro Val Ile Leu Leu Arg Thr Leu Gln Arg Glu Leu Leu Leu
245 250 255

Leu Val Asn Leu Lys Arg Gln Ser Ala His Thr Pro Leu Arg Ala Leu
260 265 270

Phe Asp Lys His Arg Val Trp Gln Asn Arg Arg Gly Met Met Gly Glu
275 280 285

Ala Leu Asn Arg Leu Ser Gln Thr Gln Leu Arg Gln Ala Val Gln Leu
290 295 300

Leu Thr Arg Thr Glu Leu Thr Leu Lys Gln Asp Tyr Gly Gln Ser Val
305 310 315 320

Trp Ala Glu Leu Glu Gly Leu Ser Leu Leu Cys His Lys Pro Leu
325 330 335

Ala Asp Val Phe Ile Asp Gly
340

<210> 10
<211> 334
<212> PRT

<213> Escherichia coli

<400> 10

Met Arg Trp Tyr Pro Trp Leu Arg Pro Asp Phe Glu Lys Leu Val Ala
1 5 10 15

Ser Tyr Gln Ala Gly Arg Gly His His Ala Leu Leu Ile Gln Ala Leu
20 25 30

Pro Gly Met Gly Asp Asp Ala Leu Ile Tyr Ala Leu Ser Arg Tyr Leu
35 40 45

Leu Cys Gln Gln Pro Gln Gly His Lys Ser Cys Gly His Cys Arg Gly
50 55 60

Cys Gln Leu Met Gln Ala Gly Thr His Pro Asp Tyr Tyr Thr Leu Ala
65 70 75 80

Pro Glu Lys Gly Lys Asn Thr Leu Gly Val Asp Ala Val Arg Glu Val
85 90 95

Thr Glu Lys Leu Asn Glu His Ala Arg Leu Gly Gly Ala Lys Val Val
100 105 110

Trp Val Thr Asp Ala Ala Leu Leu Thr Asp Ala Ala Ala Asn Ala Leu
115 120 125

Leu Lys Thr Leu Glu Glu Pro Pro Ala Glu Thr Trp Phe Phe Leu Ala
130 135 140

Thr Arg Glu Pro Glu Arg Leu Leu Ala Thr Leu Arg Ser Arg Cys Arg
145 150 155 160

Leu His Tyr Leu Ala Pro Pro Pro Glu Gln Tyr Ala Val Thr Trp Leu
165 170 175

Ser Arg Glu Val Thr Met Ser Gln Asp Ala Leu Leu Ala Ala Leu Arg
180 185 190

Leu Ser Ala Gly Ser Pro Gly Ala Ala Leu Ala Leu Phe Gln Gly Asp
195 200 205

Asn Trp Gln Ala Arg Glu Thr Leu Cys Gln Ala Leu Ala Tyr Ser Val
210 215 220

Pro Ser Gly Asp Trp Tyr Ser Leu Leu Ala Ala Leu Asn His Glu Gln
225 230 235 240

Ala Pro Ala Arg Leu His Trp Leu Ala Thr Leu Leu Met Asp Ala Leu
245 250 255

Lys Arg His His Gly Ala Ala Gln Val Thr Asn Val Asp Val Pro Gly
260 265 270

Leu Val Ala Glu Leu Ala Asn His Leu Ser Pro Ser Arg Leu Gln Ala
275 280 285

Ile Leu Gly Asp Val Cys His Ile Arg Glu Gln Leu Met Ser Val Thr
290 295 300

Gly Ile Asn Arg Glu Leu Leu Ile Thr Asp Leu Leu Arg Ile Glu
305 310 315 320

His Tyr Leu Gln Pro Gly Val Val Leu Pro Val Pro His Leu
325 330

<210> 11

<211> 57

<212> DNA

<213> Escherichia coli

<400> 11

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<210> 12

<211> 54

<212> DNA

<213> Escherichia coli

<400> 12

gctggttctc cgggtgctgc tctggctctg tttcagggtg atgactggca ggct 54

<210> 13

<211> 1002

<212> DNA

<213> Escherichia coli

<400> 13

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ggaagaggc accatgcgct actcattcag gcgttaccgg gcatggcga tgatgcttta 120
atctacgccc tgagccgtta tttactctgc caacaaccgc agggccacaa aagttgcgg 180
caactgtcgat gatgtcaggat gatgcaggct ggcacgcattt ccgattacta caccctggct 240
cccgaaaaag gaaaaaatac gctggcggtt gatgcggtaac gtgaggtaac cgaaaagctg 300
aatgagcacg cacgctttagg tggtgcaaa gtcgtttggg taaccatgc tgccttacta 360
accgacgccc cggttaacgc attgctgaaa acgcttgaag agccaccagc agaaacttgg 420

tttttcctgg ctacccgcga gcctgaacgt ttactggcaa cattacgtag tcgttgcgg 480
ttacattacc ttgcgcgcgc gccggAACAG tacGCCGTGA CCTGGCTTC acgcgaagtG 540
acaatgtcac aggatgcatt acttgcgcga ttgcgcctaa gcgcgcgttc gcctggcgCG 600
gcactggcgt tgTTTcAGGG agataactgg caggcTCGTG aaacattgtG tcaggcgttG 660
gcatatacgG tgccatcgGG cgattggtat tcgcgtctAG cggcccttaa tcatgaacaa 720
gtccccggcgc gtttacactg gctggcaacG ttgcgtatgg atgcgttaaa acgcccattat 780
ggtgctgcgc aggtgaccaa tggatgtG cggggcctgg tcgccaact ggcaaaccat 840
ctttctccct cgccgcctgca ggctatactg ggggatgttt gccacattcg tgaacagtt 900
atgtctgtta caggcatcaa ccgcgagctt ctatcaccg atctttact gcgtatttag 960
cattacctgc aaccggcgt tggctaccG gttcctcatc tt 1002

<210> 14

<211> 157

<212> DNA

<213> Escherichia coli

<400> 14

aagaatcttt cgatttcttt aatcgacaccc gcgcgcgtta tctggaaactg gcagcacaag 60
ataaaaagcat tcataccatt gatgccaccc agccgctggA ggccgtatG gatgcaatcc 120
gcactaccgt gaccactgg gtgaaggagt tggacgc 157

<210> 15

<211> 143

<212> DNA

<213> Escherichia coli

<400> 15

ttagagagac atcatgttt tagtgactc acactgccat ctcgtatggc tggattatga 60
atctttgcat aaggacgtgg atgacgttct ggcgaaagcc gccgcacgcg atgtgaaatt 120
ttgtctggca gtcgccacaa cat 143

<210> 16

<211> 16

<212> PRT

<213> Escherichia coli

<400> 16

Met Arg Trp Tyr Pro Pro Leu Arg Pro Asp Phe Glu Lys Leu Val Ala
1 5 10 15

<210> 17

<211> 11

<212> PRT

<213> Escherichia coli

<400> 17

Glu Val Thr Glu Lys Leu Asn Glu His Ala Arg

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<210> 18
<211> 20
<212> PRT
<213> Escherichia coli

<400> 18
Val Val Trp Val Thr Asp Ala Ala Leu Leu Thr Asp Ala Ala Ala Asn
1 5 10 15

Ala Leu Leu Lys
20

<210> 19
<211> 25
<212> PRT
<213> Escherichia coli

<400> 19
Thr Leu Glu Glu Pro Pro Ala Glu Thr Trp Phe Phe Leu Ala Thr Arg
1 5 10 15

Glu Pro Glu Arg Leu Leu Ala Thr Leu
20 25

<210> 20
<211> 18
<212> PRT
<213> Escherichia coli

<400> 20
Leu His Tyr Leu Ala Pro Pro Pro Glu Gln Tyr Ala Val Thr Trp Leu
1 5 10 15

Ser Arg

<210> 21
<211> 21
<212> PRT
<213> Escherichia coli

<400> 21

Leu Ser Ala Gly Ser Pro Gly Ala Ala Leu Ala Leu Phe Gln Gly Asp
1 5 10 15

Asn Trp Gln Ala Arg
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<210> 22
<211> 5
<212> PRT
<213> Escherichia coli

<400> 22
Leu Gly Gly Ala Lys
1 5

<210> 23
<211> 58
<212> PRT
<213> Escherichia coli

<400> 23
Ala Cys Thr Cys Thr Gly Gly Ala Ala Gly Ala Ala Cys Cys Gly Cys
1 5 10 15

Cys Gly Gly Cys Thr Thr Gly Ala Ala Ala Cys Thr Thr Gly Gly Thr
20 25 30

Thr Thr Thr Thr Cys Thr Gly Gly Cys Thr Ala Cys Thr Cys Gly
35 40 45

Thr Gly Ala Ala Cys Cys Gly Gly Ala Ala
50 55

<210> 24
<211> 54
<212> PRT
<213> Escherichia coli

<400> 24
Gly Cys Thr Gly Gly Thr Thr Cys Thr Cys Cys Gly Gly Thr Gly
1 5 10 15

Cys Thr Gly Cys Thr Cys Thr Gly Gly Cys Thr Cys Thr Gly Thr Thr
20 25 30

Thr Cys Ala Gly Gly Gly Thr Gly Ala Thr Ala Ala Cys Thr Gly Gly
35 40 45

Cys Ala Gly Gly Cys Thr
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<210> 25
<211> 33
<212> PRT
<213> Escherichia coli

<400> 25
Gly Gly Thr Gly Ala Ala Gly Gly Ala Gly Thr Thr Gly Gly Ala Cys
1 5 10 15

Ala Thr Ala Thr Gly Ala Gly Ala Thr Gly Gly Thr Ala Thr Cys Cys
20 25 30

Ala

<210> 26
<211> 40
<212> PRT
<213> Escherichia coli

<400> 26
Met Leu Lys Asn Leu Ala Lys Leu Asp Gln Thr Glu Met Asp Lys Val
1 5 10 15

Asn Val Asp Leu Ala Ala Ala Gly Val Ala Phe Lys Glu Arg Tyr Asn
20 25 30

Met Pro Val Ile Ala Glu Ala Val
35 40

<210> 27
<211> 57
<212> DNA
<213> Escherichia coli

<400> 27
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<210> 28

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99

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<211> 57

<212> DNA

<213> Escherichia coli

<400> 28

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<210> 29

<211> 228

<212> DNA

<213> Escherichia coli

<400> 29

atgctgaaga atctggctaa actggatcaa acagaaatgg ataaagtcaa tgtcgattt 60
gcggcggccg gggtggcatt taaagaacgc tacaatatgc cggatcgcc tgaagcggtt 120
gaacgtgaac agcctgaaca tttgcgcagc tggtttcgcc agcggcttat tgcccaccgt 180
ttggcttcgg tcaatctgtc acgtttaccc tacgagccca aacttaaa 228

<210> 30

<211> 172

<212> DNA

<213> Escherichia coli

<400> 30

aggcgttagcg aagggagcgt gcagttgaag ccatattatc tattccttt tgtaataact 60
tttttacaga cgataaccctt gtctaattgtc ttagtcgagg atcatcaatt ccggcttgcc 120
atcctggctc actcttagta actttgccc gcaaatgtatg aggagattaa ga 172

<210> 31

<211> 107

<212> DNA

<213> Escherichia coli

<400> 31

taaaaacttat acagagttac actttcttac ataacgcctg ctaaattatg agtattttct 60
aaaccgcact cataatttgc agtcattttg aaaaggaagt cattatg 107

<210> 32

<211> 76

<212> PRT

<213> Escherichia coli

<400> 32

Met Leu Lys Asn Leu Ala Lys Leu Asp Gln Thr Glu Met Asp Lys Val
1 5 10 15

Asn Val Asp Leu Ala Ala Gly Val Ala Phe Lys Glu Arg Tyr Asn
20 25 30

Met Pro Val Ile Ala Glu Ala Val Glu Arg Glu Gln Pro Glu His Leu
35 40 45

Arg Ser Trp Phe Arg Glu Arg Leu Ile Ala His Arg Leu Ala Ser Val
50 55 60

Asn Leu Ser Arg Leu Pro Tyr Glu Pro Lys Leu Lys
65 70 75

<210> 33

<211> 40

<212> PRT

<213> Escherichia coli

<400> 33

Met Leu Lys Asn Leu Ala Lys Leu Asp Gln Thr Glu Met Asp Lys Val
1 5 10 15

Asn Val Asp Leu Ala Ala Gly Val Ala Phe Lys Glu Ala Tyr Asn
20 25 30

Met Pro Val Ile Ala Glu Ala Val
35 40

<210> 34

<211> 57

<212> DNA

<213> Escherichia coli

<400> 34

atgctgaaaa acctggctaa actggatcatc actgaaatgg ataaagttaa cgttgat 57

<210> 35

<211> 57

<212> DNA

<213> Escherichia coli

<400> 35

ctggctgctg ctgggtgtgc ttttaagaa cgttataaca tgccggttat tgctgaa 57

<210> 36

<211> 33

<212> DNA

<213> Escherichia coli

<400> 36
atgatgagga gattacatat gctgaagaat ctg
<210> 37
<211> 51
<212> DNA
<213> Escherichia coli
<400> 37
gaggaattcg gctttttgc cgaattcctc ggcccctagg agatctcagc t 51
<210> 38
<211> 137
<212> PRT
<213> Escherichia coli
<400> 38
Met Thr Ser Arg Arg Asp Trp Gln Leu Gln Gln Leu Gly Ile Thr Gln
1 5 10 15
Trp Ser Leu Arg Arg Pro Gly Ala Leu Gln Gly Glu Ile Ala Ile Ala
20 25 30
Ile Pro Ala His Val Arg Leu Val Met Val Ala Asn Asp Leu Pro Ala
35 40 45
Leu Thr Asp Pro Leu Val Ser Asp Val Leu Arg Ala Leu Thr Val Ser
50 55 60
Pro Asp Gln Val Leu Gln Leu Thr Pro Glu Lys Ile Ala Met Leu Pro
65 70 75 80
Gln Gly Ser His Cys Asn Ser Trp Arg Leu Gly Thr Asp Glu Pro Leu
85 90 95
Ser Leu Glu Gly Ala Gln Val Ala Ser Pro Ala Leu Thr Asp Leu Arg
100 105 110
Ala Asn Pro Thr Ala Arg Ala Ala Leu Trp Gln Gln Ile Cys Thr Tyr
115 120 125
Glu His Asp Phe Phe Pro Gly Asn Asp
130 135

<210> 39
<211> 411
<212> DNA

<213> Escherichia coli

<400> 39

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cgccctggcg cgttgcaggc cgagattgcc attgcgatcc cggcacacgt ccgtctggc 120
atggtggcaa acgatctcc cgccctgact gatccttag tgagcgtatgt tctgcgcgca 180
ttaaccgtca gccccgacca ggtgctgcaa ctgacgcccag aaaaaatcgc gatgctgccg 240
caaggcagtc actgcaacag ttggcggtt ggtactgacg aaccgctatc actggaaggc 300
gctcagggtt catcaccggc gctcaccgat ttacggcaa acccaacggc acgcgcccgc 360
ttatggcaac aaatttgcac atatgaacac gatttcttcc ctggaaacga c 411

<210> 40

<211> 77

<212> DNA

<213> Escherichia coli

<400> 40

ggcgattata gccatatgtt ggccgcgtat cgacgaattt gctatatttgc 60
aacaggagcg attcgct 77

<210> 41

<211> 103

<212> DNA

<213> Escherichia coli

<400> 41

tgatttaccg gcagcttacc acattgaaca acgcgcccac gccttccgt ggagtgaaaa 60
aacgtttgcc agcaaccagg gcgagcgat tctcaacttt cag 103

<210> 42

<211> 27

<212> DNA

<213> Escherichia coli

<400> 42

gattccatat gacatcccga cgagact

27

<210> 43

<211> 30

<212> DNA

<213> Escherichia coli

<400> 43

gactggatcc ctgcaggccg gtgaatgagt

30

<210> 44

<211> 17

<212> PRT

<213> Escherichia coli

<400> 44

Leu Gly Thr Asp Glu Pro Leu Ser Leu Glu Glu Ala Gln Val Ala Ser
1 5 10 15

Pro

<210> 45

<211> 17

<212> PRT

<213> Escherichia coli

<400> 45

Ala Ala Leu Trp Gln Gln Ile Cys Thr Tyr Glu His Asp Phe Phe Pro
1 5 10 15

Ala

<210> 46

<211> 32

<212> DNA

<213> Escherichia coli

<400> 46

caacaggagc gattccatat gacatccgca cg 32

<210> 47

<211> 31

<212> DNA

<213> Escherichia coli

<400> 47

gattcggatc cctgcaggcc ggtgaatgag t 31

<210> 48

<211> 30

<212> DNA

<213> Escherichia coli

<400> 48

ccccacatat gaaaaacgca acgttctacc 30

<210> 49

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164

6

<211> 28
<212> DNA
<213> Escherichia coli

<400> 49
acccggatcc aaactgccgg tgacattc 28

<210> 50
<211> 441
<212> DNA
<213> Escherichia coli

<400> 50
atgaaaaacg cgacgttcta cttctggac aatgacacca ccgtcgatgg cttaagcgcc 60
gtttagcacc tgggtgtga aattgccgca gaacgttggc gcagcggtaa ggcgtgtc 120
atcgctgtg aagataaaa gcaggctac gccctggatg aagccctgtg ggcgtgtccg 180
gcagaaagct ttgttccgca taatttagcg ggagaaggac cgcgcggcgg tgtaccgg 240
gagatgcct ggccgcaaaa gcgttagcagc agccggcgcg atatattgtat tagtctgcga 300
acaagcttg cagatttgc caccgcttt acagaagtgg tagacttcgt tcctcatgaa 360
gattctctga aacaactggc gcgcgaacgc tataaagcct accgcgtggc tggttcaac 420
ctgaataacgg caacttggaa a 441

<210> 51
<211> 175
<212> DNA
<213> Escherichia coli

<400> 51
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ttatccgacc tacacagcac tgaactcgta ggcctgataa gacacaacag cgtcgcatca 120
ggcgctgcgg tgtataccctg atgcgtattt aaatccacca caagaagccc cattt 175

<210> 52
<211> 100
<212> DNA
<213> Escherichia coli

<400> 52
taatggaaaa gacatataac ccacaagata tcgaacagcc gcttacgag cactggaaa 60
aaagccagga aagtttctgc atcatgatcc cggccggaa 100

<210> 53
<211> 147
<212> PRT
<213> Escherichia coli

<400> 53
Met Lys Asp Ala Thr Phe Tyr Leu Leu Asp Asn Asp Thr Thr Val Asp

1

5

10

15

Gly Leu Ser Ala Val Glu Gln Leu Val Cys Glu Ile Ala Ala Glu Arg
20 25 30

Trp Arg Ser Gly Lys Arg Val Leu Ile Ala Cys Glu Asp Glu Lys Gln
35 40 45

Ala Tyr Arg Leu Asp Glu Ala Leu Trp Ala Arg Pro Ala Glu Ser Phe
50 55 60

Val Pro His Asn Leu Ala Gly Glu Gly Pro Arg Gly Ala Pro Val
65 70 75 80

Glu Ile Ala Trp Pro Gln Lys Arg Ser Ser Ser Arg Arg Asp Ile Leu
85 90 95

Ile Ser Leu Arg Thr Ser Phe Ala Asp Phe Ala Thr Ala Phe Thr Glu
100 105 110

Val Val Asp Phe Val Pro Tyr Glu Asp Ser Leu Lys Gln Leu Ala Arg
115 120 125

Glu Arg Tyr Lys Ala Tyr Arg Val Ala Gly Phe Asn Leu Asn Thr Ala
130 135 140

Thr Trp Lys
145

<210> 54

<211> 29

<212> PRT

<213> Escherichia coli

<400> 54

Met Lys Asn Ala Thr Phe Tyr Leu Leu Asp Asn Asp Thr Thr Val Asp
1 5 10 15

Gly Leu Ser Ala Val Glu Gln Leu Val Xaa Glu Ile Ala
20 25

<210> 55

<211> 9

<212> PRT

<213> Escherichia coli

<400> 55

Val Leu Ile Ala Xaa Glu Asp Glu Lys

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5

<210> 56

<211> 21

<212> PRT

<213> Escherichia coli

<400> 56

Leu Asp Glu Ala Leu Trp Ala Ala Pro Ala Glu Ser Phe Val Pro His

1

5

10

15

Asn Leu Ala Gly Glu

20

<210> 57

<211> 10

<212> PRT

<213> Escherichia coli

<400> 57

Gly Gly Ala Pro Val Glu Ile Ala Trp Pro

1

5

10

<210> 58

<211> 8

<212> PRT

<213> Escherichia coli

<400> 58

Gly Phe Asn Leu Asn Thr Ala Thr

1

5

<210> 59

<211> 30

<212> DNA

<213> Escherichia coli

<400> 59

ccccacatat gaaaaacgac acgttctacc

30

<210> 60

<211> 28

1 61 <212> DNA

<213> Escherichia coli

<400> 60

acccggatcc aaactgccgg tgacgttc

28

19

108

E